Trends in Treated Opiate Misuse in Dublin: the emergence of chasing the dragon

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Abstract.

Aims. Examine trends in treated opiate misuse and identify factors associated with route of heroin use. **Design**. Cross-sectional survey. **Setting**. Services providing addiction treatment in Dublin. **Participants**. Individuals making their first ever contact seeking treatment for current opiate misuse, between January 1991 and December 1996. **Measurements**. Data on socio-demographics and current drug use. **Findings**. The study population was 3981. Over the six-year period, there was a 330% increase in the number of new attenders. The proportion of females increased. The mean age of first opiate use declined and users began presenting earlier in their opiate using careers, causing a decline in the age profile of new attenders. Heroin users were more likely to smoke (chase) rather than inject after 1994 (odds ratio 3.3, 95% confidence interval 2.4-4.5). Apart from year of presentation, the other significant independent predictors of chasing as the preferred route of heroin use were being in employment, shorter history of use, less frequent use, younger age, longer period in education, and absence of polydrug use. Gender did not independently predict route of use. **Conclusions**. Ireland has joined the growing number of European countries witnessing a movement towards heroin chasing. This has coincided with a surge in the number of people entering treatment. We are concerned that the greater acceptability of this route of use may be drawing increased numbers of individuals into heroin use.

232 words

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Introduction

Patterns of drug use tend to alter over time. At the population level, changes can occur in the socio-demographic profile of users, the type of drug used and the route of drug administration. In Hong Kong, there has been a significant increase in the proportion of young drug users entering treatment in the 1990's[1]. In Europe, there have been reports of changes in the route of use of heroin. Increasing proportions of users are opting to smoke or 'chase the dragon' rather than inject and this has been welcomed in terms of harm reduction[2-4]. A study in London revealed that chasing became the predominant route of first heroin use from 1980 onwards[4]. In Amsterdam, a cohort study examining the transition from non-injecting to injecting found that ethnic factors, and being in a sexual relationship with a partner who injects were associated with increased risk of commencement of injecting[5]. Route of heroin use was examined in a community sample by Strang in London in 1991[6] and in a large population of treated drug users in Spain in the early 1990s by de la Fuenta[7]. Both found that chasers were more likely to be female, had started heroin use at an older age, had shorter histories of heroin use and were less likely to misuse stimulants. Strang also found that they were younger, less likely to use daily, and less likely to have attended treatment. De la Fuenta detected a rise in the practice of chasing over the three years studied.

In Dublin, opiate abuse has been identified as a problem since the 1970's, at which stage heroin injecting was the predominant behaviour[8]. Addiction services have greatly expanded since 1990 and the harm reduction approach has guided much of the expansion[9]. Between 1991 and 1996, the number of community outreach workers increased by 250%, the number of addiction treatment centres increased from two to four and twelve satalite clinics were established in order to provide more community based treatment. Opiate use is very uncommon outside of Dublin[10,] The Health Research Board (HRB) established the Drug Treatment Reporting System in 1990 in

the Greater Dublin Area only. It was extended to the whole country in 1995, becoming the National Drug Treatment Reporting System (NDTRS). All agencies providing treatment or therapy for problem drug use were requested to complete a structured questionnaire on each client attending their service. Services providing only syringe exchange did not participate in this reporting system. Staff from the HRB maintained frequent contact with all treatment agencies to ensure compliance with the reporting system. Data were obtained on treatment contact details, socio-demographic information, problem drug use and risk behaviour. Names and other identifying information were not recorded in the database to ensure anonymity.

Method.

The database of the NDTRS was used in this study. Individuals were included if they were resident in Dublin between January 1991 and December 1996, were making their first ever treatment contact, and reporting current use of an opiate as their principal drug of abuse. Of 5361 first ever treatment contacts in Dublin during this period, 3981 (74.3 %) met this last element of the criteria. This study confined itself to new attenders in order to ensure that each individual only entered the database once. The inclusion of reattenders would have made interpretation of trends more complex as differing subgroups may have substantially different rates of reattendance.

Statistical Analysis

The Mantel-Haenzel chi squared test for linear trend was used to examine for the presence of temporal trends in categorical variables. Pearson's chi squared test was used to examine for associations between categorical variables and route of heroin use and odds ratios, and their 95%

confidence intervals, were calculated to determine the direction and magnitude of the association. Multivariate analysis was performed using logistic regression. Variables were selected for entry into the final logistic regression equation by using both the forward stepwise and backward stepwise selection techniques.

Results

Table 1. *Socio-demographic and drug misuse characteristics by year of presentation for all new attenders currently primarily abusing opiates 1991–1996.*

	Overall		1991–92		1993–94		1995–96		
	N	(%)	N	(%)	N	(%)	N	(%)	p value
Total	3981		503		1316		2162		
Gender									
Male	3062	(77.5	411	(82.2)	1087	(82.9)	1564	(73.1)	
Female	889	(22.5)	89	(17.8)	225	(17.1)	575	(26.9)	< 0.001
Age (years)									
Under 21	2174	(54.8)	195	(39.2)	761	(58.0)	1218	(56.4)	
21 and over	1796	(45.2)	302	(60.8)	552	(42.0)	942	(43.6)	< 0.001
Age left school (years)									
Under 15	1108	(29.6)	149	(31.4)	397	(31.6)	562	(28.0)	
15 and over	2630	(70.4)	325	(68.6)	858	(68.4)	1447	(72.0)	0.03
Main opiate									
Heroin	3293	(82.7)	257	(51.1)	1005	(76.4)	2031	(93.9)	
Morphine sulphate	453	(11.4)	180	(35.8)	210	(16.0)	63	(2.9)	
Physeptone	135	(3.4)	14	(2.8)	63	(4.8)	58	(2.7)	
Other	100	(2.5)	52	(10.3)	38	(2.9)	10	(0.5)	< 0.001
Age of first use years)									
Under 16	456	(11.8)	47	(9.7)	104	(8.1)	305	(14.5)	
16 or 17	1393	(35.9)	101	(20.7)	550	(42.6)	742	(35.3)	
18 and over	2030	(52.3)	339	(69.6)	637	(49.3)	1054	(52.3)	< 0.001
Duration of use (years)									
1 or 2	2628	(68.1)	296	(60.8)	854	(66.3)	1478	(70.9)	
3 and over	1232	(31.9)	191	(39.2)	434	(33.7)	607	(29.1)	< 0.001
Primary Route									
Inject	2027	(51.1)	344	(69.4)	864	(65.7)	819	(38.0)	
Smoke	1692	(42.6)	88	(17.7)	341	(25.9)	1263	(58.5)	
Other	250	(6.3)	64	(12.9)	110	(8.4)	76	(3.5)	< 0.001
Secondary drug									
No	710	(18.5)	77	(15.3)	190	(14.5)	443	(21.8)	
Yes	3136	(81.5)	426	(84.7)	1124	(85.5)	1586	(78.2)	< 0.001

Missing variables. Gender 30, age 11, school-leaving age 243, age of first use 102, duration of use 121, route of use 12, secondary drug use 135.

Table 1 indicates the socio-demographic and drug misuse characteristics of the study population. Overall, 77.5% were male and the mean age was 21.5 years (SD 4.7). The unemployment rate was 88.2% and 29.9% ceased school attendance before reaching the legal minimum school leaving age of 15 years. The mean age for commencing opiate use was 18.7 years (SD 3.8) and the mean duration of opiate use was 2.6 years (SD 2.7). Eighty-eight per cent commenced opiate use in the 1990's. Daily opiate use was reported by 84.3%. Apart from heroin, morphine sulphate and methadone, other opiates reported included dihydrocodeine (1.0 %), buprenorphine (0.5 %) and codeine (0.1 %),

There was a 330% increase in the number of opiate users entering treatment in 1995-96 compared to 1991-92. Over the six years, there were substantial changes in the socio-demographic profile of new attenders. There were increases in the proportions who were female, aged under 21 years and reporting having remained in education until at least aged 15 years. Drug use characteristics also altered significantly. There were increased proportions using heroin, reporting commencement of opiate use before the age of 16, using opiates for less than three years and opting to smoke as their main route of use. The proportion using a second drug dropped by a small but significant amount. The unemployment rate and the proportion reporting daily opiate use did not alter significantly (data not shown).

Table 2. *Proportion of current heroin users injecting by socio-demographic and drug use variables*

			Univariate analysis		Multivariate analysis	
	Number[1]	% injecting	Odds Ratio(95%ci)	*p* value	Adjusted OR	*p* value
Total	3257	48.3				
Gender						
Male	2447	50.0				
Female	783	43.6	0.77(0.65–0.91)	0.002		
Age (years)						
Under 21	1831	44.2				
21 and over	1422	53.9	1.48(1.28–1.70)	< 0.001	1.33 (1.06–1.66)	0.01
Work						
Employed[2]	370	30.0				
Unemployed	2844	50.8	2.42 (1.91–3.05)	< 0.001	2.46 (1.87–3.23)	< 0.001
Age left school (years)						
15 and over[3]	2170	45.2				
Under 15	904	57.4	1.64 (1.40–1.91)	< 0.001	1.50 (1.25–1.79)	< 0.001
Year attended						
1991–92	251	66.1				
1993–94	991	66.0	0.99(0.73–1.35)	0.97	0.95 (0.69–1.31)	0.77
1995–96	2015	37.5	0.31(0.23–0.41)	< 0.001	0.30 (0.22–0.41)	< 0.001
Age first used heroin (years)						
Under 16	399	46.4				
16 or 17	1159	50.5	1.18(0.93–1.49)	0.16	1.05 (0.80–1.38)	0.71
18 and over	1626	47.6	1.05(0.84–1.32)	0.66	0.79 (0.59–1.06)	0.12
Duration of heroin use (years)						
1 or 2	2181	41.4				
3 & over	983	64.2	2.54(2.16–2.97)	< 0.001	2.20 (1.81–2.67)	< 0.001
Frequency of use						
Less than daily	517	35.0				
Daily	2740	50.9	1.92 (1.58–2.34)	< 0.001	1.97 (1.57–2.46)	< 0.001
Secondary drug use						
No	619	41.4				
Yes	2509	50.6	1.45(1.21–1.74)	< 0.001	1.26 (1.02–1.54)	0.03

[1] Missing variables: gender 27, age 4, work 43, school-leaving age 183, age of first use 73, duration of use 93, secondary drug use 129. [2] Employed group includes 59who were still in education or in training. [3] This group includes 37 attenders aged 15 and over who were still in education.

Table 2 examines the associations between route of heroin use and the following independent variables; gender, age, employment, age left school, age first used heroin, duration and frequency of heroin used and secondary drug use. Of 3257 heroin users, data was complete in 2845 (87 %) cases, and the logistic regression analysis was conducted on this group. This

multivariate analysis revealed that age of onset of heroin use and gender did not significantly predict route of heroin use. The strongest predictors of reporting chasing as the current route of heroin use (odds ratio >2 or <0.5, p<0.001) were being employed, attending for treatment after 1994, heroin use for less than three years. Other factors significantly predictive of chasing were heroin use less than daily, age of less than 21 years, remaining in education until at least 15 years and no use of a second substance. Heroin chasers presented for treatment within two years of first use in 78.4% of cases, compared to 58.9% of injectors (chi squared = 140, p<0.001).

Table 3. *Route of heroin use by gender, stratified by year of presentation for treatment*

Year Presented	Gender	Number	% injecting	*p* value
1991–92	Male	197	63.5	
	Female	53	75.5	0.10
1993–94	Male	809	67.1	
	Female	178	60.7	0.10
1995–96	Male	1441	38.5	
	Female	552	35.0	0.14

Gender's absence of any significant influence on route of use is further demonstrated in table 3. This reveals that when data are stratified by year of presentation, gender did not significantly predict route of heroin use.Over the six year period, there was a substantial decline in the proportion of injectors among both males and females (chi squared =185 and 60 respectively, p<0.001 in both cases).

Discussion

The 330% increase in the number of new patients presenting for the first time for treatment of opiate use is striking. Due to its magnitude it cannot be explained by demographic changes or a movement of opiate users into Dublin to avail of improved and expanded treatment services. It

could be postulated that many opiate users may have been uninterested in the strict abstinence model that dominated treatment approaches in Dublin in the 1980's and very early 1990's, postponed treatment and produced an apparent increase in new attendances in the mid 1990's. However, only 12% of the new attenders during the study period were using opiates prior to 1990 and we in fact demonstrated that opiate users with longer histories accounted for less of these new cases over the study period. The trend for patients to enter treatment earlier will have accounted for a small portion of the detected increase in new attenders. It remains possible that the incidence of heroin use has increased in Dublin, contributing to the rise in new attenders. During this period the price of heroin 'on the street' in Dublin fell by about 50%. This may explain in part both the detected increase in popularity of heroin among the opiates and the rise in numbers of individuals seeking treatment for heroin use.

Both 'age of first use' and 'duration of use' reduced, leading to a substantial fall in the age profile of new attenders. The trend for users to enter treatment earlier is to be welcomed and may reflect the success of strategies such as outreach work and establishment of small community based satellite treatment clinics during this period. However, the increasing numbers of young adults and adolescents presenting to services will pose new challenges[11]. We found clear evidence that the protective effect of the female gender is reducing, as their proportion rose from 18% to 27% during this short period of time. Cassin examined new attenders at the largest syringe exchange in Dublin in 1997 and also found evidence of a reduction in age of first drug use and an increase in the proportion of female attenders[12]. As well as placing increasing demands on addiction treatment services, this rise in female opiate users has major implications for obstetric, forensic and social services.

Early school leavers were identified as a group at particular risk in terms of opiate use. They were substantially over-represented among this population. Among heroin users, we demonstrated that this group were also more likely to inject.

Individuals were recruited exclusively from treatment settings and may differ from those who do not enter treatment. This limits our ability to extrapolate our findings to the broader population of opiate users in Dublin. As reattenders were not included, our data does not reflect the profile of all attenders at treatment services. If all attenders had been included, the age profile would have been older for examlple. Another limitation of the study is the NDTRS itself. Attempting to obtain detailed information on all treatment contacts made to all treatment agencies is an ambitious undertaking. Although close contact is maintained between the HRB and treatment agencies to encourage full compliance there is no way of ensuring that this compliance is 100%. This task was at its easiest at the start of this study when the vast majority of addiction treatment was provided by a single treatment agency. The service expansion during the study period complicates interpretation of trends. It is possible that the altered structure of treatment delivery may have been more effective at attracting certain subgroups of opiate users into treatment. However, the reduction in timegap from initiating opiate use to treatment presentation existed quite consistantly across the various subgroups (data not shown). We believe that the very large number of patients involved in this study and the fact that data was obtained over a period of six years allowing exploration of temporal trends, compensate for these design weaknesses.

There was a dramatic increase in the practice of heroin smoking after 1994 when it became the most common route of heroin use for new attenders. Although the data collection instrument

used in the NDTRS does not specify the practice of chasing (the term 'smoking' is used), a recent pilot study found that chasing is indeed the method via which heroin users smoke heroin in Dublin[13]. The reasons for this rise in the practice of chasing are unclear but reflect patterns evident elsewhere in Europe[3, 4,7]. Strang has reviewed in detail the various influences that may be at play to explain the emergence of this method of heroin consumption[14]. The argument has been made that fear of HIV/AIDS has been important in the move away from injecting[15]. If this was a crucial factor in Ireland, one might have anticipated that chasing would have become the dominant method of use much earlier than 1995, a full ten years after widespread awareness of AIDS and the risks of injecting. Elsewhere, a movement towards chasing has been detected prior to awareness of AIDS[7]. Hence, while HIV/AIDS may be an important influence, it is probably simplistic to assume that it alone accounts for the change towards injecting. In a commentary on Strang[14], San[16] suggests that this change in the pattern of use does not seem to be related to AIDS prevention or harm reduction policies but rather is the preferred route in people starting to use heroin, particularly in those reluctant to self-inject. Heroin base is more suitable for chasing compared to the hydrochloride salt. In England and Spain, increasing availability of heroin base has been associated with the emergence of heroin chasing[7, 14]. Unfortunately, there are no published data on the type of heroin examined in Irish forensic laboratories. However, in view of our geography, on the western tip of Europe, beyond England, the detected trends in England are likely to be mirrored in this country.

While the proportion of injectors dropped significantly from two-thirds to slightly over one-third, it should be noted that the actual number of injectors entering into treatment continued to rise after 1994. Strang has argued that heroin chasing can be durable as the preferred route of heroin use and the rise in popularity of this method of use is positive in terms of

harm[6,14].However, our population of heroin users were early into their drug using careers as over three-quarters of the chasers had been using for two years or less. Cassin found that 93% of young opiate injectors smoked prior to injecting and that the mean time spent smoking was about two years[12]. Hence, an unquantifiable but substantial number of those who presented as chasers are likely to switch to injecting. On this issue, one can draw some optimism from De la Fuenta's argument that the incidence of injecting among populations of heroin chasers drops as the overall prevalence of chasing among the heroin using population increases[2].

Both Strang and De la Fuenta found that females were less likely to inject[2, 6.] Strang has proposed that there may be greater taboo surrounding injecting by females. When the confounding influence of year of presentation was controlled, we found no association between gender and route of heroin use and hence detected no evidence that such a taboo exists in Dublin. Importantly, and again unlike the English and Spanish studies, 'age of first use' was found not to predict route of current use. 'Age of first use' declined significantly over this period. This implies that the age profile of heroin injectors is dropping. This is a major cause for concern, not least because many studies have identified increased levels of unsafe injecting among younger injectors[11,17,18].

The findings that chasing was associated with younger age, shorter history, less frequent heroin use and absence of additional substance misuse are consistent with the published literature[2, 6.] Both employment and remaining in school until at least age 15 years also predicted chasing as the method of heroin use. These two factors could be considered as crude markers of socio-economic status and may thus indicate an increase in heroin chasing among those from less deprived environments, not typically associated with heroin use in the past in Dublin.

This study highlights the very dynamic nature of substance misuse. Addiction treatment services need to monitor closely and adapt to the changing profile of misusers and misuse. On the issue of the emerging practice of heroin chasing, while identifying possible gains in terms of harm reduction, Strang has cautioned that the more acceptable nature of this practice may attract increasing numbers of people to try heroin[14]. Our findings suggest that this may indeed be the case as the rise in chasing coincided with a very substantial rise in the number of new users presenting for treatment. There is a need for prospective studies to follow-up heroin chasers to measure the rate of transition to injecting and to identify the factors which facilitate or prevent such transitions in route of use. We are concerned that chasing may prove to be a dragon in sheep's clothing.

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